

**REMARKS**

These amendments and remarks are filed in response to the Office Action dated December 15, 2009. In view of these amendments and remarks, this application should be allowed and the case passed to issue. No new matter is introduced by these amendments. Support for the amendment to claim 1 is found in Table 1 on page 12 of the specification.

Claims 2-10 are pending in this application. Claims 2-10 have been rejected. Claim 8 is amended in this response. Claim 1 was previously canceled.

***Claim Rejections Under 35 U.S.C. § 103***

Claims 2-5 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jahn (US 3,240,542) in view of Ikezawa et al. (US 5,630,668). The Examiner found that Jahn discloses a thrust needle bearing employing lubricating and having a rolling element (3) held by a cage (4) and rolling on a race, the cage has a cage pocket (2), in which the rolling element is stored to come in contact with a pocket guide face (6, 61, 7). The Examiner acknowledged that Jahn does not disclose a specific clearance dimension, but discloses a clearance be set so as to facilitate the entry of wedge-shaped layers of lubricant. The Examiner found the clearance dimension is a result dependant variable. The Examiner concluded that it would have been obvious through routine experimentation to select a clearance range of 60-130  $\mu\text{m}$  to allow for lubricating wedge of lubricant. The Examiner acknowledged that Jahn does not disclose a value of the arithmetic average roughness Ra of the rolling element. Ikezawa et al. teach a thrust needle bearing employing lubricating oil having a rolling element held by a cage wherein the arithmetic average roughness Ra of the rolling element set to at least 0.3 micrometers and at most 0.15 micrometers. The Examiner concluded that it would have been obvious to set the average roughness Ra below 0.05 for the purpose of decreasing friction and reducing wear.

Claims 6, 7, 9, and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jahn. The Examiner concluded that it would have been obvious to select a clearance within the claimed range for the desired purpose of allowing a lubricating wedge of oil to achieve the desired lubricating characteristics.

These rejections are traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

Jahn and Ikezawa et al., whether taken in combination, or taken alone, do not suggest the claimed thrust needle bearings. The cited references do not suggest the clearance between the pocket guide face of the cage and the rolling element is set to at least 60  $\mu\text{m}$  and at most 130  $\mu\text{m}$ , as required by claim 6; and the clearance between the pocket guide face of the cage and the rolling element is set to at least 60  $\mu\text{m}$  and at most 130  $\mu\text{m}$ , and the value of the arithmetic average roughness Ra of the rolling element coming into contact with the shear plane is set to at least 0.08  $\mu\text{m}$  and at most 0.15  $\mu\text{m}$ , as required by claim 8.

Jahn and Ikezawa et al. do not suggest the unexpected improvement in depth of wear of roller, 10 % life, and life ratio, as shown in Tables 3 and 4 of the specification. In fact, the results achieved by the present invention are counterintuitive. The present invention is superior to thrust needle bearings having smoother surfaces. Further, as regards claim 8, synergy is achieved by the combination of the claimed rolling element smoothness and clearance between a pocket guide face of the cage, as explained in the specification in the paragraph pages 8 and 9.

In addition to not disclosing that the rolling element comes into contact with the pocket guide face constituted by the shear plane formed through pressing, Ikezawa et al. also do not teach that the surface roughness Ra of the rolling element coming into contact with the shear

plane, is set to at least 0.08  $\mu\text{m}$  and at most 0.15  $\mu\text{m}$ , as required by claim 8. As shown in Table 1 of the present specification, excellent results are obtained in terms of depth of wear of roller, 10% life, and exfoliated part in samples 3 and 4 where Ra is 0.08  $\mu\text{m}$  or more as compared with sample 2 having a Ra 0.04  $\mu\text{m}$ . Ikezawa et al., on the other hand, discloses, "the surface roughness is desirably adjusted to be no more than 0.05  $\mu\text{m}$ " (col. 11, lines 48-50, see also claim 7).

Furthermore, Table 2 of Ikezawa et al. illustrates that excellent properties are not obtained in any of service life, pitting, flaking, peeling, and wear in samples of more than 0.05  $\mu\text{m}$  Ra. Therefore, Ikezawa et al. neither disclose nor suggest excellent properties obtained in depth of wear, 10% life, and exfoliation by setting the Ra to at least 0.08  $\mu\text{m}$ . Rather, Ikezawa et al., clearly teach away from setting the Ra to at least 0.08  $\mu\text{m}$ , as required by claim 8.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Jahn et al. and Ikezawa et al. to modify a thrust needle bearing to provide a cage having a cage pocket, in which the rolling element is stored to come in contact with a pocket guide face thereof constituted by a shear plane formed through pressing for the cage pocket, and the clearance between the pocket guide face of said cage and the rolling element is set to at least 60  $\mu\text{m}$  and at most 130  $\mu\text{m}$ , as required by claim 6; and a cage having a cage pocket, in which the rolling element is stored to come in contact with a pocket guide face thereof constituted by a shear plane formed through

pressing for the cage pocket, the clearance between the pocket guide face of the cage and the rolling element is set to at least 60  $\mu\text{m}$  and at most 130  $\mu\text{m}$ , and the value of the arithmetic average roughness Ra of the rolling element coming into contact with the shear plane is set to at least 0.03  $\mu\text{m}$  and at most 0.15  $\mu\text{m}$ , as required by claim 8.

The only teaching of the claimed thrust needle bearings is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Examiner's unsupported, conclusory assertions are not sufficient to establish a prima facie case of obviousness.

In response to Applicant's assertions of unexpected results, the Examiner did not find the results to be unexpected. The Examiner's finding is strenuously traversed. As explained above, the results are counterintuitive. As noted in *In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997) (citing *In re Soni*, 54 F.3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995)), "[W]hen an applicant demonstrates *substantially* improved results, . . . and *states* that the results were *unexpected*, this should suffice to establish unexpected results *in the absence* of evidence to the contrary." *Geisler*, 116 F.3d at 1471 (quoting *In re Soni*, 54 F.3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995)) (emphasis in original). In the present application Applicant has presented evidence of unexpected results, while the Examiner has merely presented unsupported arguments. Because the Applicant has presented evidence of unexpected results, while the Examiner has not presented any evidence to counter the unexpected results, it is clear that unexpected results have been established.

In view of the above amendments and remarks, Applicant submits that this application should be allowed and the case passed to issue. If there are any questions regarding this

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Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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